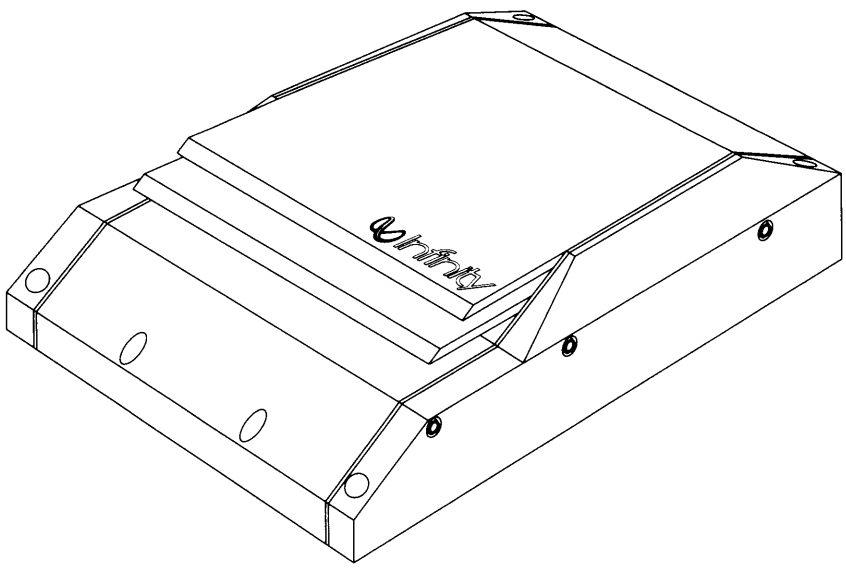
Infinity®

CAR AUDIO

DPA 275/250 Digital Power Amplifier



Service Manual

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Infinity CAR AUDIO DPA 275/250 Digital Power Amplifier

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Introduction

The Infinity DPA 275/250 Digital Power Amplifier is a breakthrough innovation for the mobile audio after-market. This product is the next generation of amplification, and it makes all other mobile amplifier technologies obsolete.

The DPA 275 offers stereo, bridged-mono, or tri-mode operation, and delivers 75 watts (rms) per channel into a 4-ohm load. The DPA 250 produces 50 watts (rms) per channel operating in stereo only and does not have a bass control. Otherwise, both models come with these features:

- Our innovative Differential Amplification Output Switching is the design essence of this product
- HPDA (High Power Digital-to-Analog) Converter on each channel to directly convert digital signals into amplified analog audio waveforms
- Custom-designed high-speed MOSFET switching power supply to supply voltages for internal circuits
- Five protection levels guard against over-voltage, under-voltage, over-power, over-temperature, and over-current situations
- High efficiency – requires far less electrical power and generates a smaller amount of heat
- Small footprint – when compared to conventional Class AB amplifiers with equivalent power ratings
- Amplifier input sensitivity control – to match a wide range of input signal levels
- The DPA 275 has a bass equalization control to provide up to 11 dB of bass boost at 40 Hz
- Color-keyed, industrial-grade, gold-plated connections for an easy-to-install high-quality interface
- Security connection cover defeats tampering with installation wiring
- Rugged, sleek-looking case – built for the road, yet is still a showpiece

Specifications

DPA 275 Power Output:	75 W per channel (stereo), 150 W bridged-mono; < 1 % THD (@ 4 Ω)
DPA 250 Power Output:	50 W per channel (stereo); < 1 % THD (@ 4 Ω)
Frequency Response:	20 Hz ~ 20 kHz, ± 1 dB (@ 4 Ω)
Signal-To-Noise:	> 85 dBa
Input Sensitivity:	250 mV~ 2 V ac, variable
DPA 275 Bass Eq.:	40 Hz, variable 0 ~ 11 dB
Operating Voltage:	10 ~ 15 V dc
Idle Current Draw:	0.8 A
Remote Current Draw:	< 100 µA
DPA 275 Dimensions:	6 3/8"*w* x 3 3/16"*h* x 8 3/4"*l*
DPA 250 Dimensions:	5 3/4"*w* x 3 3/16"*h* x 8 3/4"*l*

Infinity constantly strives to update and improve existing products, as well as create new ones. Therefore, the specifications and construction details in this and related Infinity publications are subject to change without notice.

THEORY OF OPERATION

The DPA275/250 Digital Power Amplifier uses a proprietary, patent-pending design, as shown below in Figure 1, that takes advantage of the "bit stream" improvements in digital audio and works faithfully to provide transparent, high-quality reproduction via pulse-width modulated power for the mobile environment.

POWER SUPPLY CIRCUITS

The DPA 275 uses a high-speed MOSFET switching power supply to create ±15 Vdc and ±38 Vdc to produce 75 watts of RMS power per channel into a nominal four ohm load. The DPA 250 uses ±33 Vdc for 50 watts RMS.

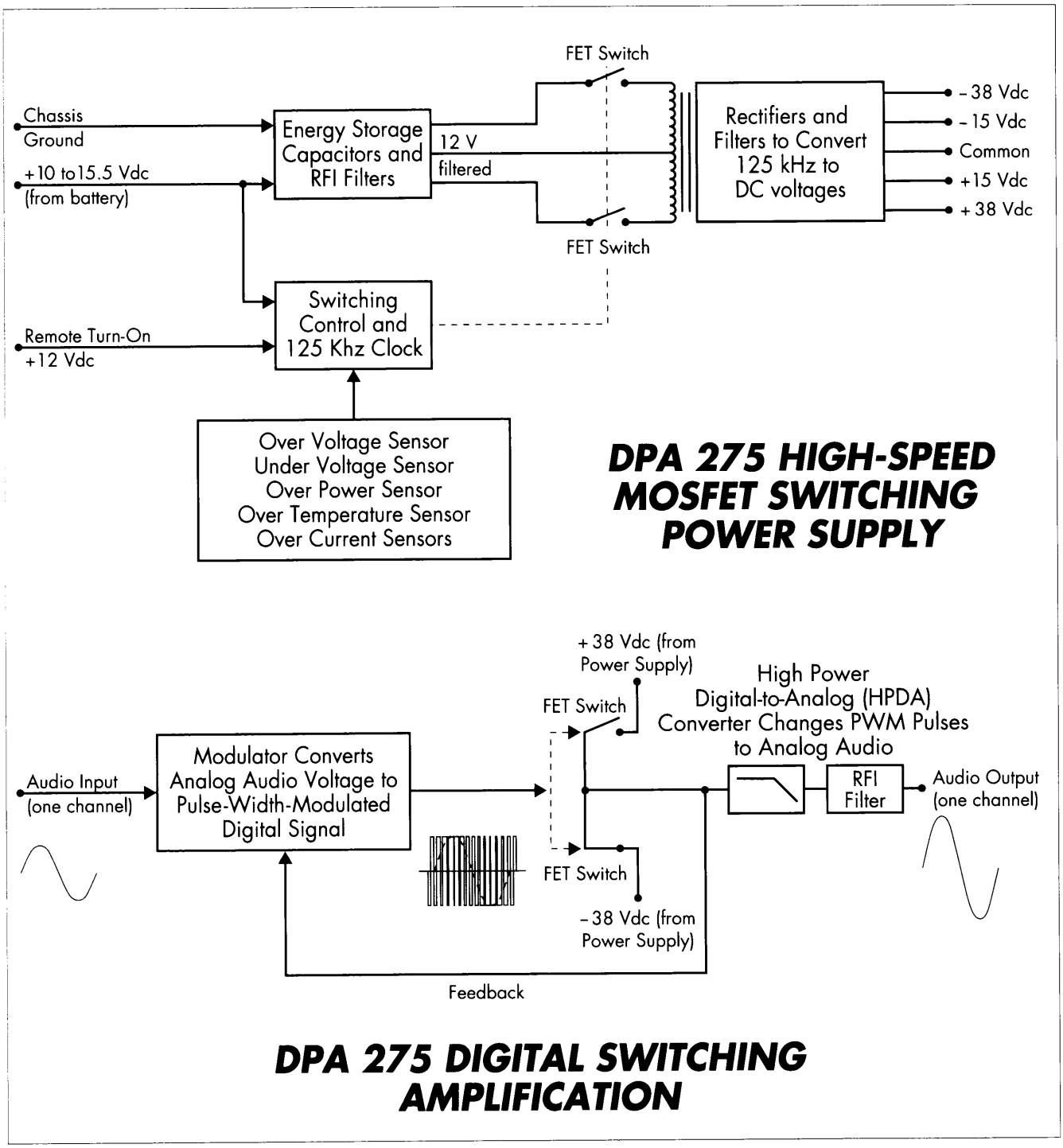
FET Switch
Chassis Ground
+10 to15.5 Vdc (from battery)
Energy Storage Capacitors and RFI Filters
12 V filtered
Rectifiers and Filters to Convert 125 kHz to DC voltages
- 38 Vdc
- 15 Vdc
Common
+15 Vdc
+ 38 Vdc
FET Switch
Switching Control and 125 Khz Clock
Remote Turn-On +12 Vdc
Over Voltage Sensor
Under Voltage Sensor
Over Power Sensor
Over Temperature Sensor
Over Current Sensors
DPA 275 HIGH-SPEED MOSFET SWITCHING POWER SUPPLY
+ 38 Vdc (from Power Supply)
FET Switch
High Power Digital-to-Analog (HPDA) Converter Changes PWM Pulses to Analog Audio
Audio Input (one channel)
Modulator Converts Analog Audio Voltage to Pulse-Width-Modulated Digital Signal
RFI Filter
Audio Output (one channel)
FET Switch
- 38 Vdc (from Power Supply)
Feedback
DPA 275 DIGITAL SWITCHING AMPLIFICATION

Figure 1. A simplified block diagram for the DPA 275 Digital Power Amplifier shows two main circuits – the High-Speed MOSFET Power Supply and the Digital Switching Amplification circuit. The DPA 250 is the same, except substitute ±33 V dc for the ±38 V dc rails.

THEORY OF OPERATION

POWER SUPPLY CIRCUITS (CONTINUED)

Rather than use off-the-shelf integrated circuit chips, we designed a unique voltage doubler having a constant frequency and duty cycle with a short signal path to produce a power supply with a 90 percent efficiency rating, regardless of normal battery voltage.

The power supply uses a higher clock rate (125 kHz versus 30 kHz in typical designs), which presents several advantages. First, the size of its components and the accompanying package is smaller. This insures that generated RFI is not audible and will not interfere with the amplifier's switching frequencies. In addition, a pair of asynchronous clocks, controlling the switching circuits of the power amplifiers, operate at different frequencies on the left and right channels to eliminate the possibility of any heterodyne effect.

DIGITAL AUDIO CIRCUITS

To amplify audio, we developed a new technology called Differential Amplification Output Switching. As shown in Figure 1 (on the previous page), it consists of a proprietary 500 kHz pulse-width modulation circuit, to sample and convert incoming analog audio to digital "1-bit" pulses (which is the equivalent of an 11-times oversampling rate in digital audio terms).

The high modulation frequency insures precision sampling that is free of audible RFI artifacts, and also allows us to use passive, gentle-slope filtering for minimum phase shift when the analog waveform is reconstructed at the output. In essence, we have incorporated a High Power D-to-A (HPDA) converter within the design. The digital pulses control a complementary pair of fast, high-current MOSFET switches that create amplified 76 V dc pulses (66 V dc pulses for DPA 250) across the voltage rails. Two-stage RFI filtering removes the 500 kHz carrier frequency, and the result is a pure amplified analog signal that is transparent and adds no sound of its own!

To better understand how an analog signal is extracted from a digital pulse-width waveform, refer to Figure 2 during the following discussion. When there is no incoming audio signal, the DPA 275 modulator circuit creates a pulse-width waveform having a 50 % duty cycle. This means the waveform spends half of its time at +38 V dc and the other half of its time at -38 V dc. When you sum (i.e., average) the areas under each positive and negative excursion (in the way our HPDA does), you get a net result of zero – or no voltage output.

Let's assume an instantaneous positive voltage is now present at the analog input, and the modulator shifts the duty cycle of the pulse-width waveform, so more time is spent at

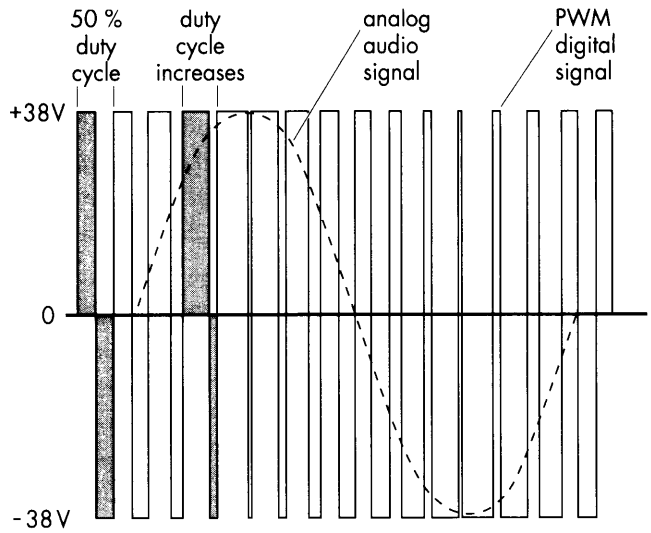

Figure 2. Duty cycle is a measurement of the time a digital signal is on versus the time it is off over one cycle of the waveform. It is expressed as a percentage (e.g., a 50 % duty cycle means the signal is on half of the time). A positive voltage increase in the analog audio signal translates to an increased duty cycle in the pulse-width modulated (PWM) digital signal.

+38 V dc than at the -38V dc rail. When these areas are averaged, a positive value at the output is the net result. Repeating this process creates a continuous amplified analog waveform from the stream of 500 kHz samples.

For optimum performance, the DPA 275/250 should only drive a 4-ohm load. As in crossover filter design, there is a direct result of having to specify a load impedance in order to build the output filters used in the HPDA converter. We choose 4 ohms as the best compromise between the most common values of 8 and 2 ohms. Other loads can be used, but they will change filter characteristics and affect the amplifier's frequency response, as shown in Figure 3.

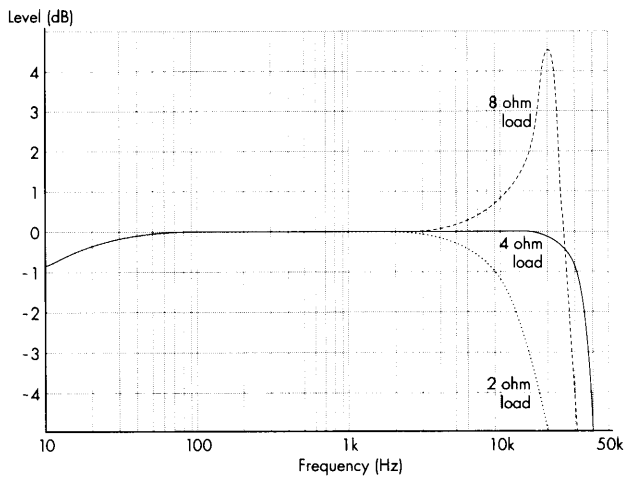

Figure 3. Frequency response for a DPA 275 with both channels driving loads of 2, 4, and 8 ohms. Note the differences in the high frequencies when compared to the optimum 4-ohm response.

REQUIRED TEST EQUIPMENT

- Analog or digital VOM
- 12 V dc power supply, 20 A (minimum), 20 A fuse (ATC)
- Sinewave generator, 20 Hz ~ 20 kHz bandwidth (min.)
- Oscilloscope, 20 MHz bandwidth (minimum)
- Load resistors, 4 ohms, 100 W (minimum)
- High-quality double-shielded RCA cables
- 14-gauge or larger speaker wire
- (Optional) Audio Precision or Sound Technology audio analyzer

REQUIRED TOOLS

- Allen driver or key, 5/64"
- Allen ball-driver or key, 7/64"
- Pliers, small needle-nose
- Pliers, small diagonal-cutting
- Screwdriver, small flat blade
- Soldering iron with various size tips
- Solder with embedded flux
- Solder wick or equivalent
- (Optional) Solder/desolder station

VERIFYING THE PROBLEM

The DPA 275/250 has five levels of circuit protection that monitor and will shut down the amplifier under the following conditions:

- Vehicle's electrical system voltage drops below 10 V dc
- Vehicle's electrical system voltage exceeds 15 V dc
- Ambient temperature is above 194° F (90° C)
- Short circuit
- Current draw exceeds 20 A

It's quite possible the suspect amplifier is actually working correctly and is only shutting down to protect itself. Before you disassemble a DPA 275/250, perform the following simple tests to verify that there really is a problem:

1. Connect the DPA 275 or DPA 250 to your test equipment, as shown in Figure 4.

NOTE: The DPA 275 connections for the R (right) speaker are reversed in polarity compared to the DPA 250.

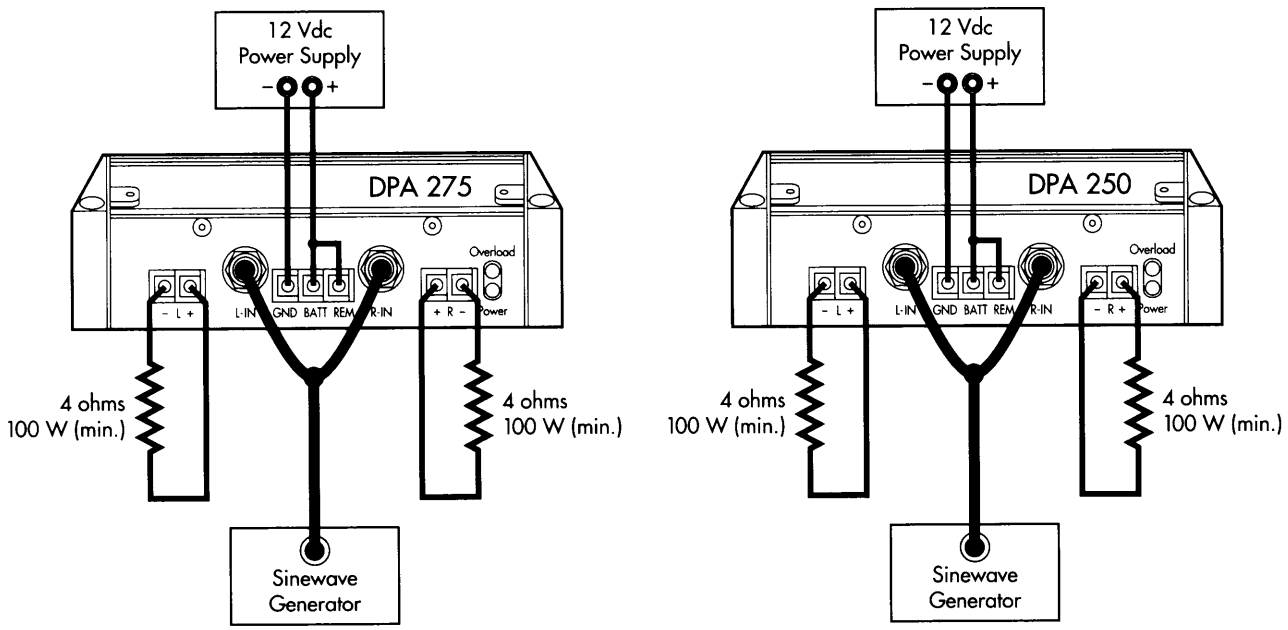

Figure 4. Wiring diagrams to connect a DPA 275 or DPA 250 to test equipment.

VERIFYING THE PROBLEM (CONTINUED)

2. Initially turn the Input Sensitivity control (counter-clockwise) to its minimum position.
3. Set the sinewave generator to 1 V rms at 1 kHz and feed both L and R inputs. Connect the oscilloscope to monitor L and R outputs at the respective 4-ohm loads.
4. Turn on the 12 V dc power supply, slowly increase the Input Sensitivity control, and stop when the output sinewave just starts clipping. Continue this full-load test for 20 minutes and make note of any failures or distortion of the sinewave.

NOTE: If the DPA 275/250 shuts down or blows the external fuse, disassemble the unit (see "Disassembling The DPA 275/250") and use the detailed block diagram and schematics to repair the defective amplifier. If distortion is observed, check all wiring connections before disassembly and troubleshooting.

5. (Optional) Assuming the amplifier is still operating properly after the full-load test (see step 4), verify the amplifier continues to operate by varying the 12 V dc power supply from 10 to 15 V dc.
6. If there are no failures, check the frequency response and THD. Compare the results against the listed specifications (see page 1). If the unit fails to meet these values, disassemble it (see *Disassembling The DPA 275/250*) and use the detailed block diagram and schematics to repair the defective amplifier.

NOTE: If these tests confirm specifications, advise your customer that the problem is due to a short circuit or high ambient temperature within the car audio system.

DISASSEMBLING THE DPA 275/250

Use the following procedure to disassemble a DPA 275/250 for repair. If your facility is unable to perform this service, repack the amplifier in its original carton (see Figures 7 on page 10), obtain a return authorization number from our customer service department, and ship the unit to us for repair.

1. With the amplifier bottom facing up, remove the tamper-proof label (958-6474), as shown in Figures 5 and 6 (on the next two pages).
2. Remove the two 6-32 x 3/8" button screws (800-5697) from the rear.
3. With amplifier top facing up, remove the two 6-32 x 3/8" button screws (800-5697) from the front panel (located above the RCA input jacks).
4. Unfasten three #6 x 3/4" allen-cap screws (801- 5577) from right (708-5573) and left (708-5571) side caps.
5. Remove both side caps and carefully slide the front heaksink (709-558 for DPA 275 or 709-5729 for DPA 250) away from the rear heatsink.
6. For the DPA 275, unfasten four 6-32 x 3/4" allen-cap screws (800- 5578) located under the rear heatsink fin.

   For the DPA 250, unfasten five 6-32 x 3/4" allen-cap screws (800- 5578) located under the rear heatsink fin.
7. Remove the rear heatsink (709-5559 for DPA 275 or 709-5730 for DPA 250) along with the transistor pad (952-5930 for DPA 275 or 952-5926 for DPA 250) and transistor clamp (709-5560 for DPA 275 or 709-5731 for DPA 250). At this point, the circuit board is accessible for service and can be lifted from the bottom panel.
8. After the repair has been made, refer to Figures 5 and 6 and assemble the unit in reverse order. Place a new tamper-proof label to complete the work.

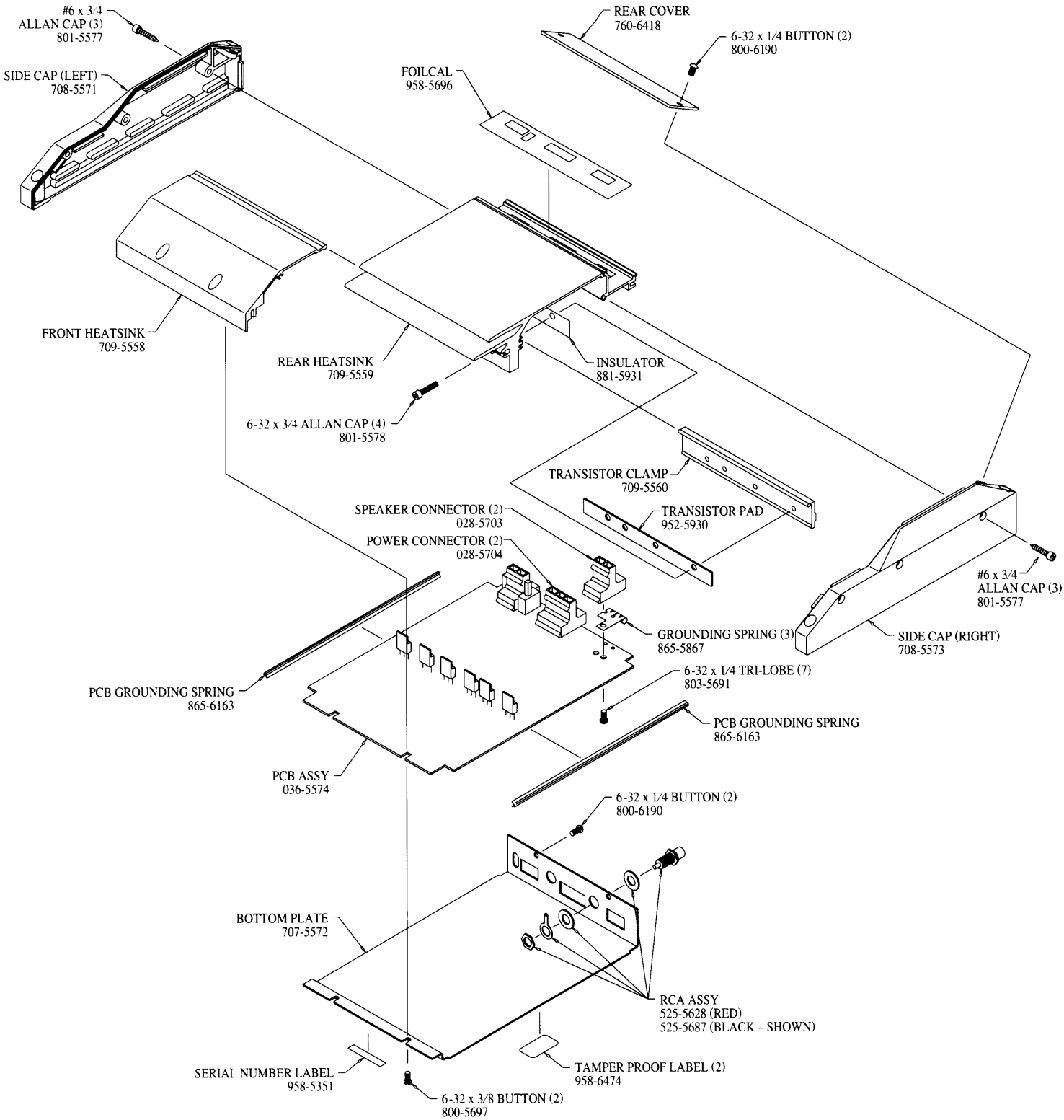

Figure 5. Exploded diagram shows a detailed disassembly (assembly) procedure for the DPA 275 Digital Power Amplifier.

DPA 275 HARDWARE PARTS AND PACKING MATERIALS

PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
.028...5703	Speaker Connection Assembly	.801...5694	#8 x 1¾" Phrd #8 HD Spcl Blk Type A
.028...5704	**Power Connection Assembly**	**.803...5691**	**6-32 x .25 PPH Tin-Plated Trilorbular**
.036...5574	PCB Assembly, DPA 275	.865...5867	Spring, Connector
.525...5628	**RCA Fml Red Pnl Mt Jack AD3505FP-R**	**.865...6163**	**Spring, PCB Grounding**
.525...5687	RCA Fml Blk Pnl Mt Jack AD3505FP-B	.881...5931	Insulator, DPA 275
.550...6600	**Fuse Hldr ATC P108FH w/20 Amp Fuse**	**.930...5580**	**Owners Manual**
.707...5572	Plate, Bottom, DPA 275	.930...6501	Template, Drill
.707...5575	**Cover Back, Metal**	**.936...6191**	**5/64" Allen Wrench**
.708...5571	Cap, Left Side	.946...5581	Carton, Outer DPA 275
.708...5573	**Cap, Right Side**	**.947...5831**	**Master Carton (2 per package), DPA 275**
.709...5558	Extrusion, Front, DPA 275	.951...5829	Foam End Pad, Left
.709...5559	**Extrusion, Rear, DPA 275**	**.951...5830**	**Foam End Pad, Right**
.709...5560	Extrusion, Transistor Clamp, DPA 275	.952...5930	Pad, Transistor, DPA 275
.716...5360	**Logo, Gold/Silver Plastic**	**.955...1438**	**Plastic Bag 12" x 9"**
.800...5578	6-32 x ¾" Allan Cap #6 HD	.955...1452	Plastic Bag 4" x 6"
.800...6190	**6-32 x ¼" BSHO Spcl Black 5/64 Drive**	**.958...5351**	**Label, Bar Code/Serial/Date Code**
.800...5697	6-32 x 3/8" BSOH Spcl Black	.958...5696	Label, Lexan Digital Power Amp 275
.801...5577	**#6 x ¾" Allan Cap Type AB Spcl Black**	**.958...6474**	**Label, Tamper Proof**
.801...5693	#8 x 1" Phrd #8 HD Spcl Black Type A	.960...1425	Tape, Packing

DPA 250 HARDWARE PARTS AND PACKING MATERIALS

PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
.028...5703	Speaker Connection Assembly	.801...5694	#8 x 1¾" Phrd #8 HD Spcl Blk Type A
.028...5704	**Power Connection Assembly**	**.803...5691**	**6-32 x .25 PPH Tin-Plated Trilorbular**
.036...5725	PCB Assembly, DPA 250	.865...5867	Spring, Connector
.525...5628	**RCA Fml Red Pnl Mt Jack AD3505FP-R**	**.865...6163**	**Spring, PCB Grounding**
.525...5687	RCA Fml Blk Pnl Mt Jack AD3505FP-B	.881...5927	Insulator, DPA 250
.550...6600	**Fuse Hldr ATC P108FH w/20 Amp Fuse**	**.930...5580**	**Owners Manual**
.707...5727	Plate, Bottom, DPA 250	.930...6501	Template, Drill
.707...5728	**Cover Back, Metal, DPA 250**	**.936...6191**	**5/64" Allen Wrench**
.708...5571	Cap, Left Side	.946...5732	Carton, Outer, DPA 250
.708...5573	**Cap, Right Side**	**.947...5831**	**Master Carton (2 per package), DPA 250**
.709...5729	Extrusion, Front, DPA 250	.951...5829	Foam End Pad, Left
.709...5730	**Extrusion, Rear, DPA 250**	**.951...5830**	**Foam End Pad, Right**
.709...5731	Extrusion, Transistor Clamp, DPA 250	.952...5926	Pad, Transistor, DPA 250
.716...5360	**Logo, Gold/Silver Plastic**	**.955...1438**	**Plastic Bag 12" x 9"**
.800...5578	6-32 x ¾" Allan Cap #6 HD	.955...1452	Plastic Bag 4" x 6"
.800...6190	**6-32 x ¼" BSHO Spcl Black 5/64 Drive**	**.958...5351**	**Label, Bar Code/Serial/Date Code**
.800...5697	6-32 x 3/8" BSOH Spcl Black	.958...5733	Label, Lexan Digital Power Amp 250
.801...5577	**#6 x ¾" Allan Cap Type AB Spcl Black**	**.958...6474**	**Label, Tamper Proof**
.801...5693	#8 x 1" Phrd #8 HD Spcl Black Type A	.960...1425	Tape, Packing

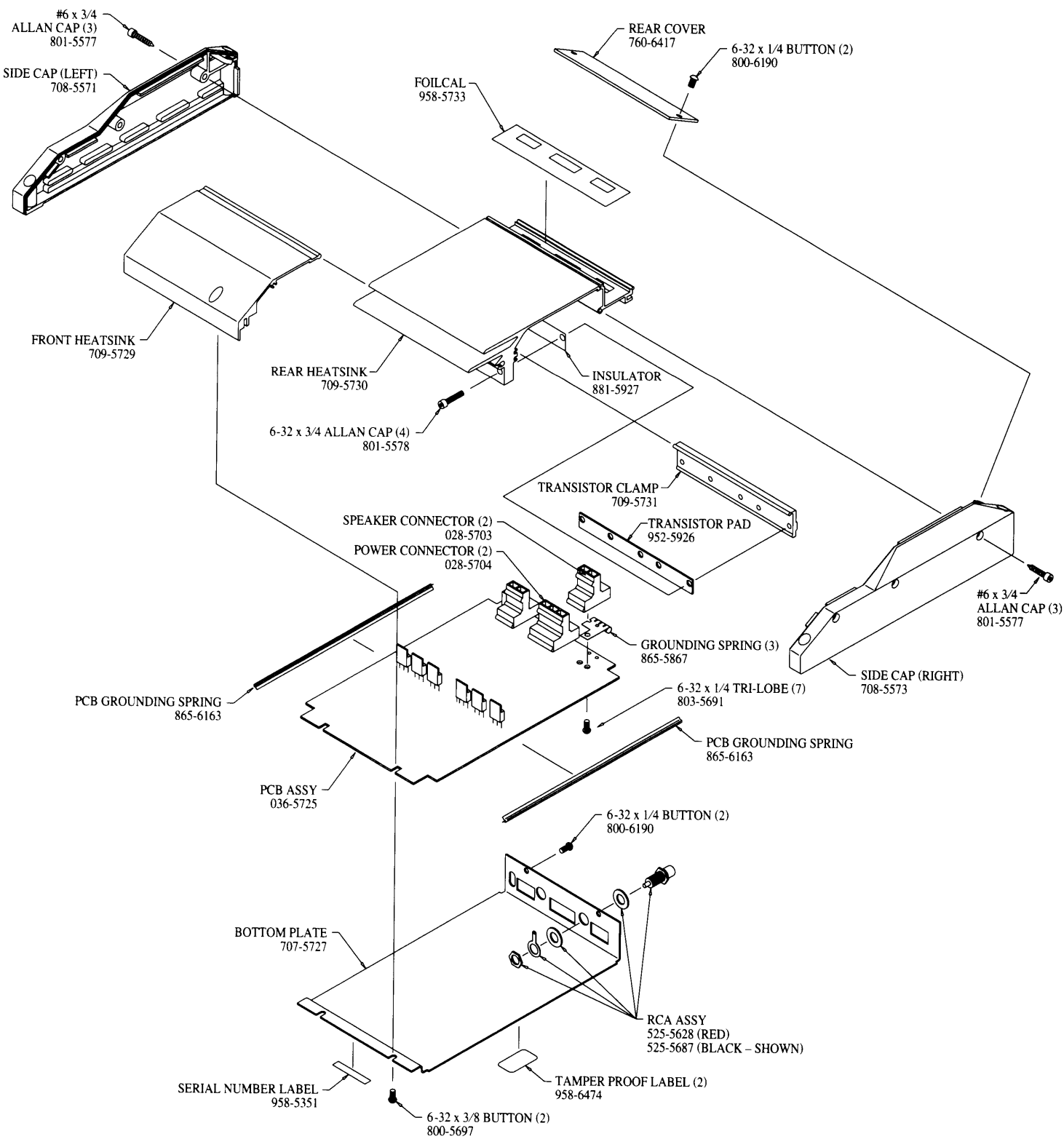

Figure 6. Exploded diagram shows a detailed disassembly (assembly) procedure for the DPA 250 Digital Power Amplifier.

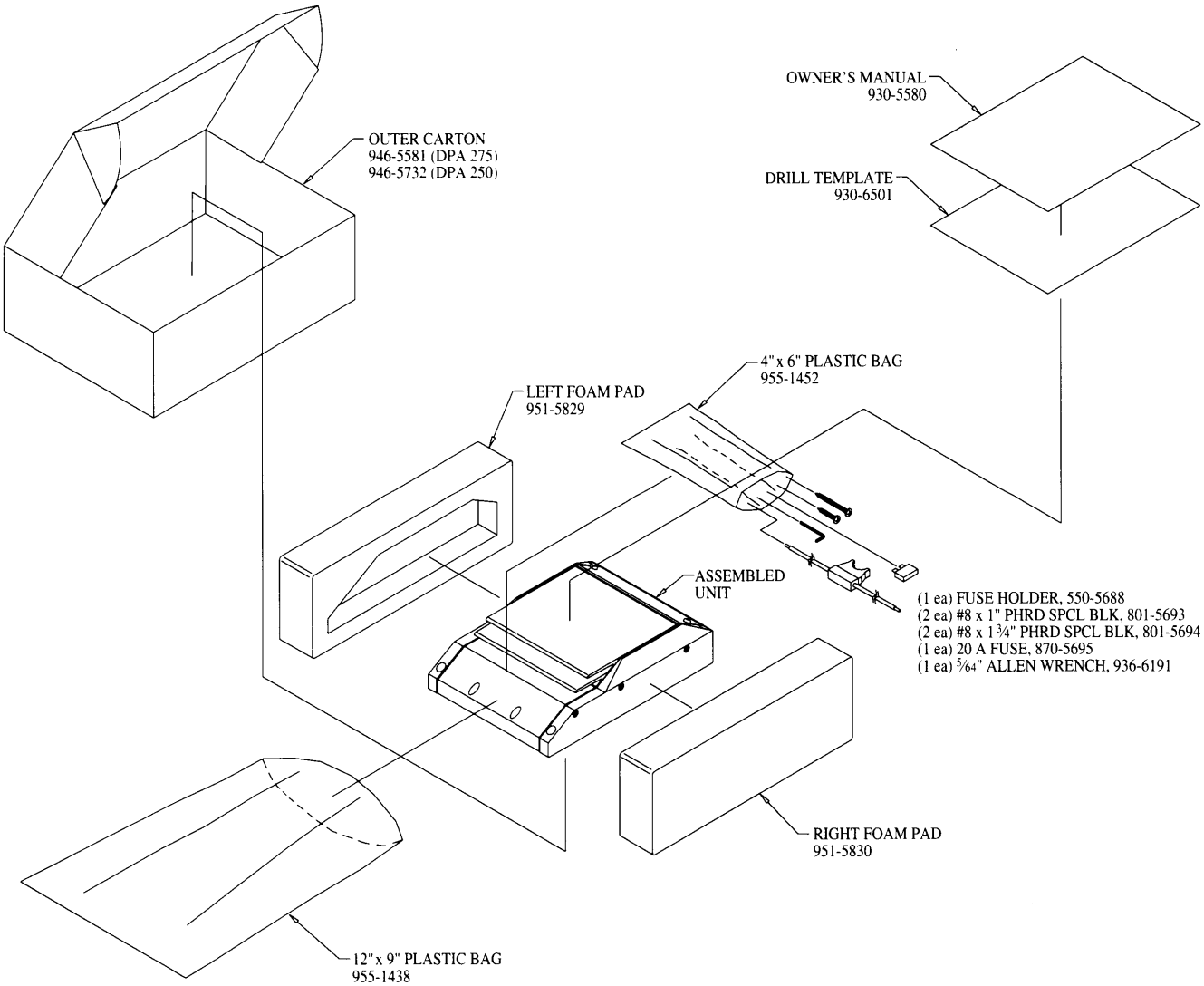

Figure 7. Exploded diagram shows packing procedure for the DPA 275/250 Digital Power Amplifier.

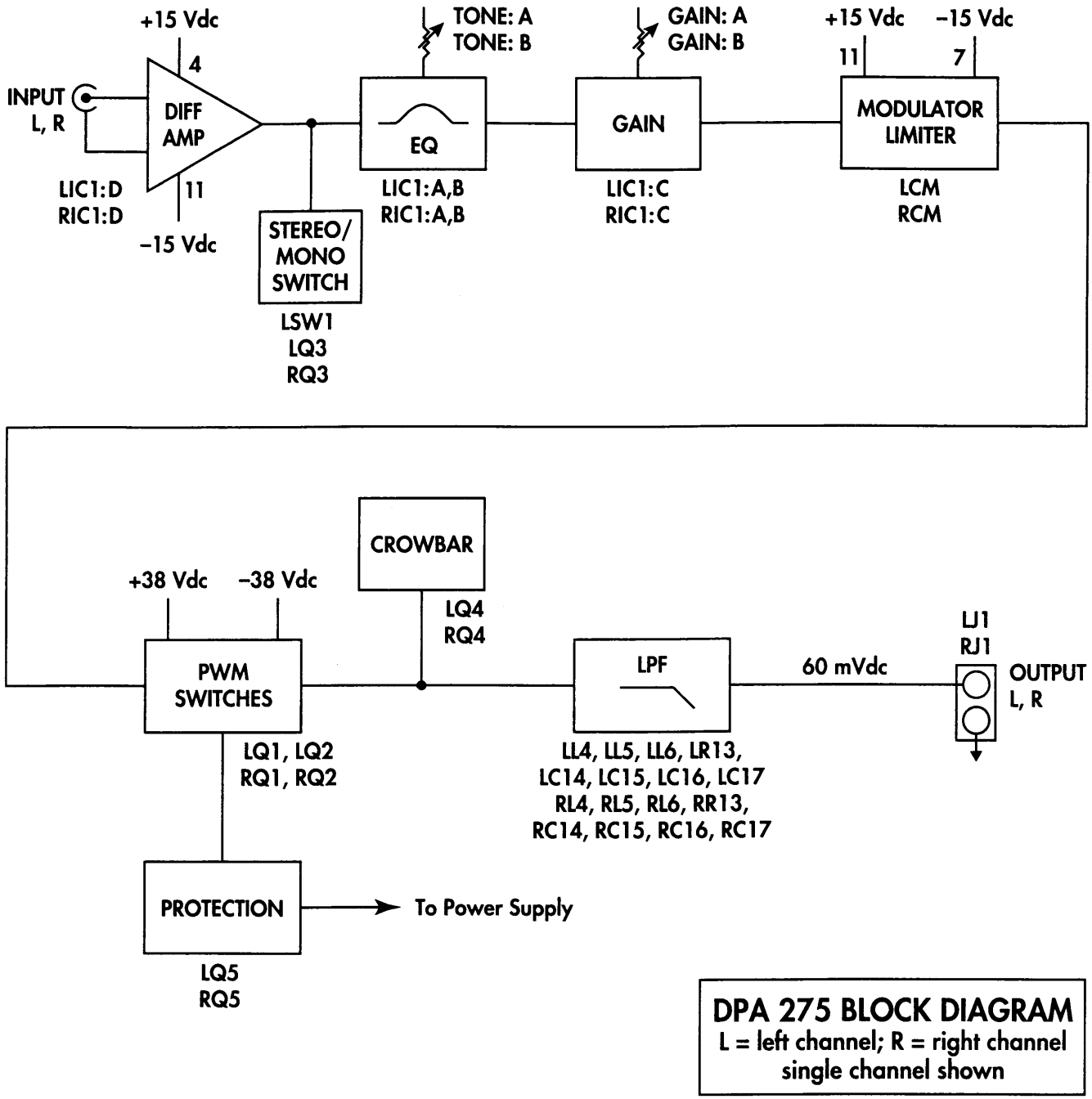

Figure 8. Block diagram of DPA 275 Digital Power Amplifier shows proper operating voltages.

DPA 275 SCHEMATIC – AMPLIFIER CIRCUITS

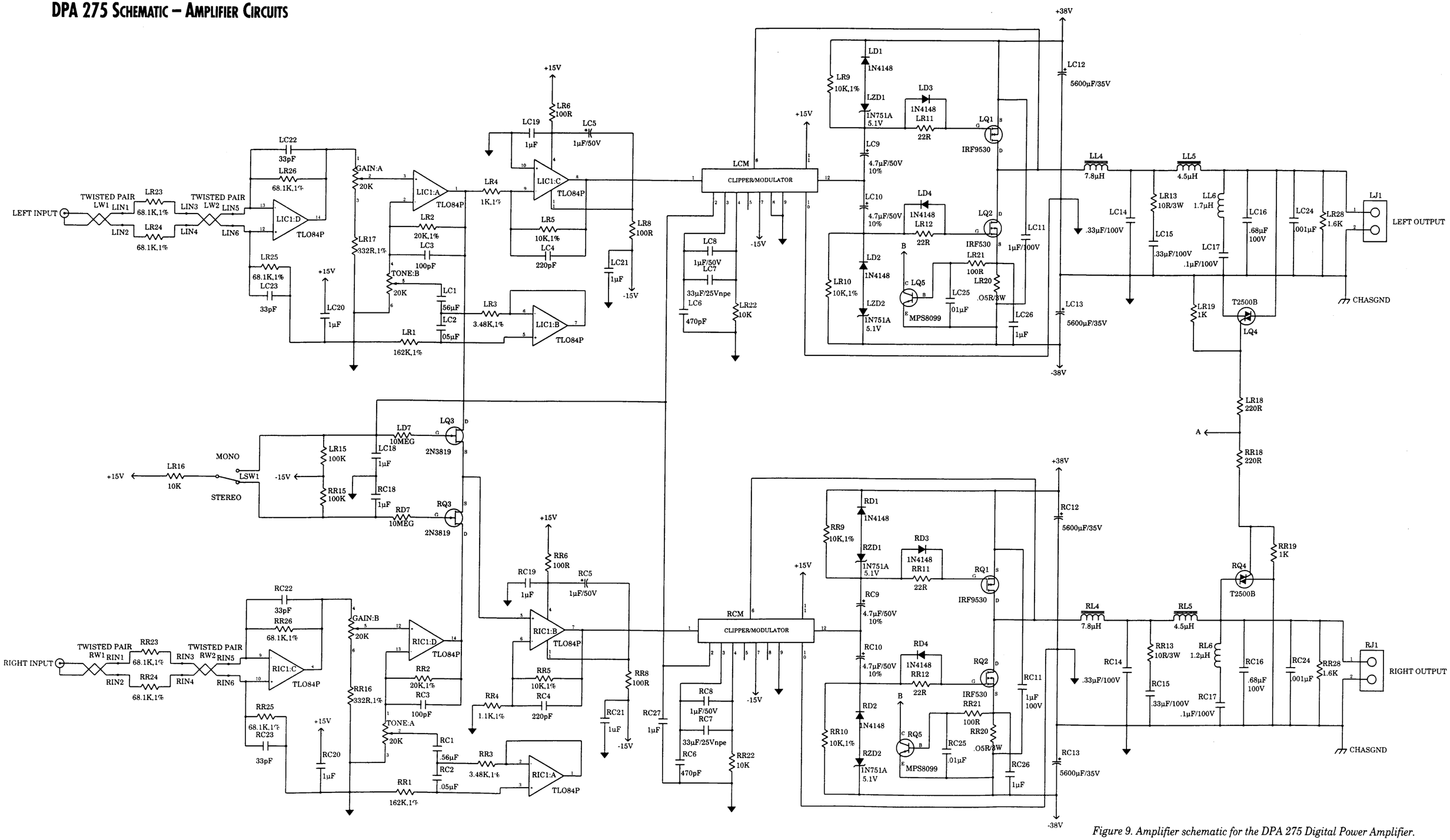

Figure 9. Amplifier schematic for the DPA 275 Digital Power Amplifier.

DPA 275 SCHEMATIC – POWER SUPPLY CIRCUITS

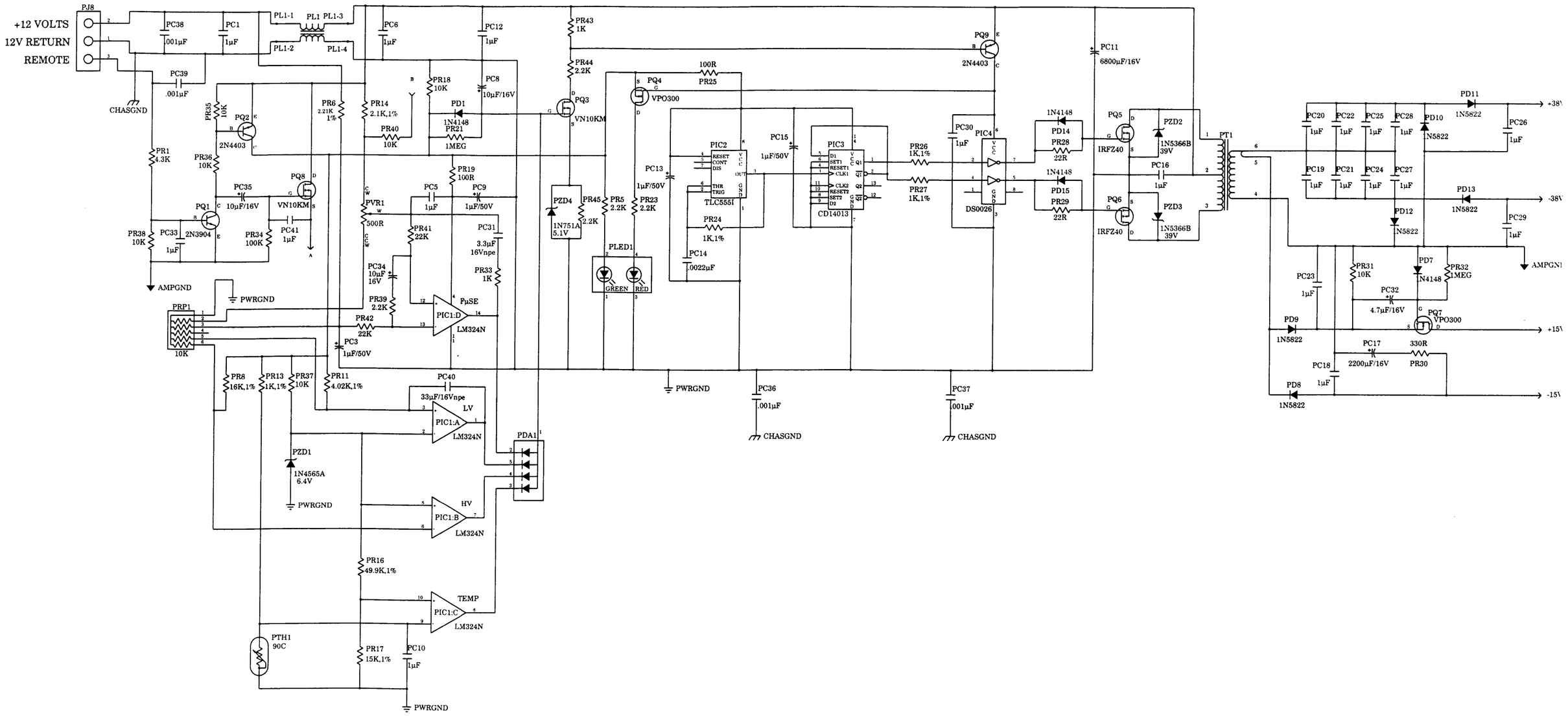

Figure 10. Power supply schematic for the DPA 275 Digital Power Amplifier.

DPA 275 Circuit Board Layout

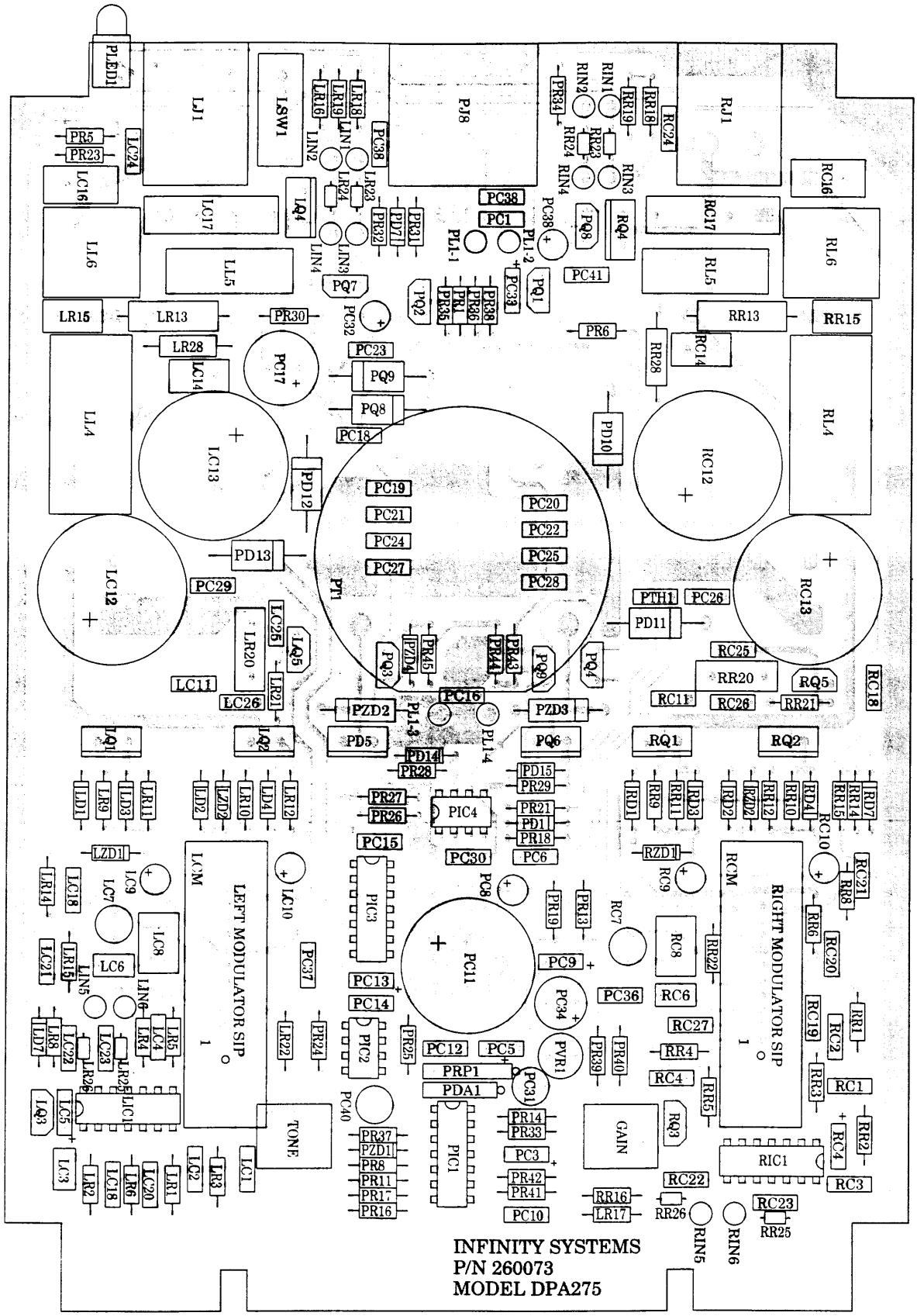

Figure 11. Circuit board layout of DPA 275 Digital Power Amplifier.

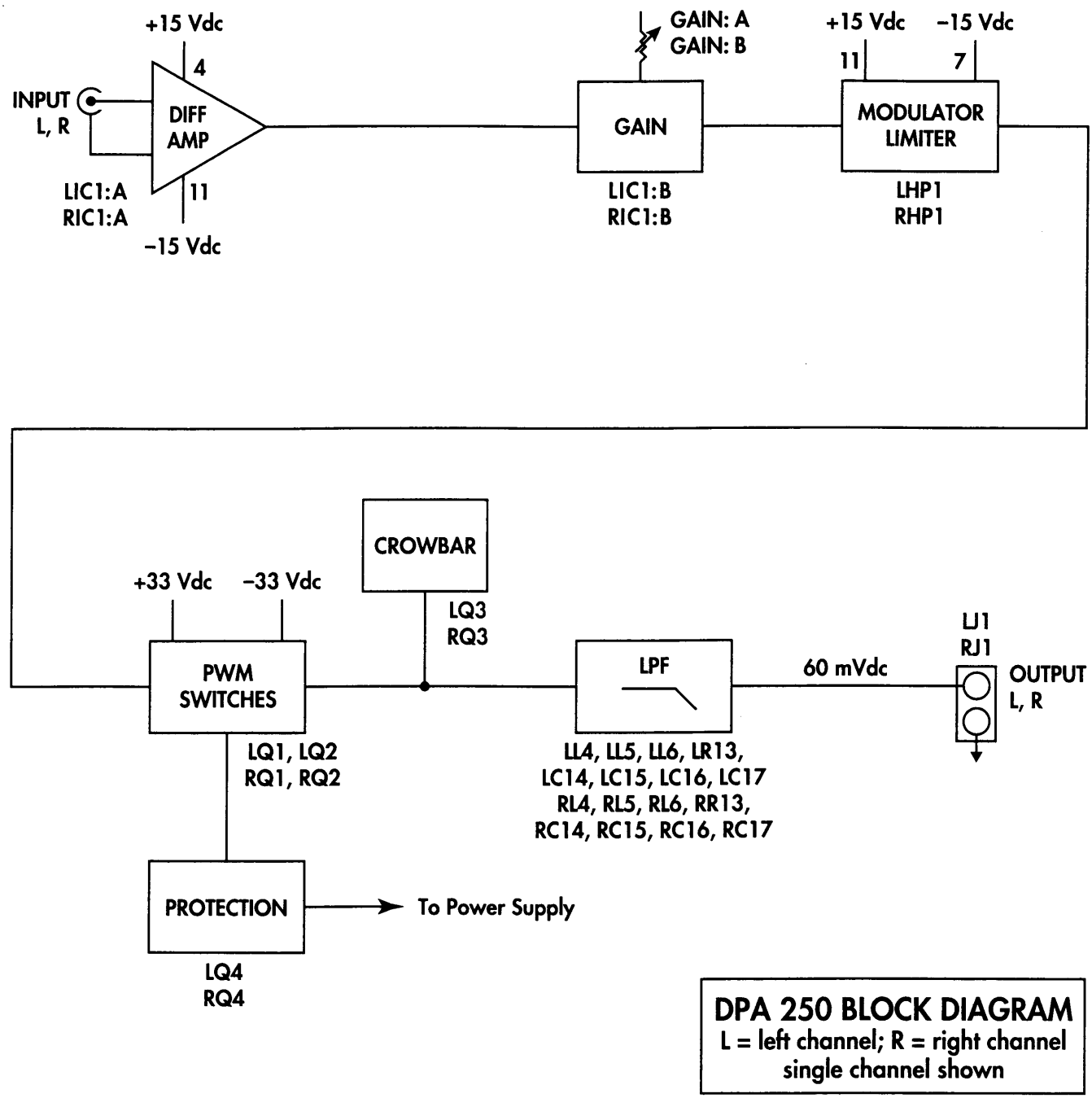

Figure 12. Block diagram of DPA 250 Digital Power Amplifier shows proper operating voltages.

DPA 250 SCHEMATIC – AMPLIFIER CIRCUITS

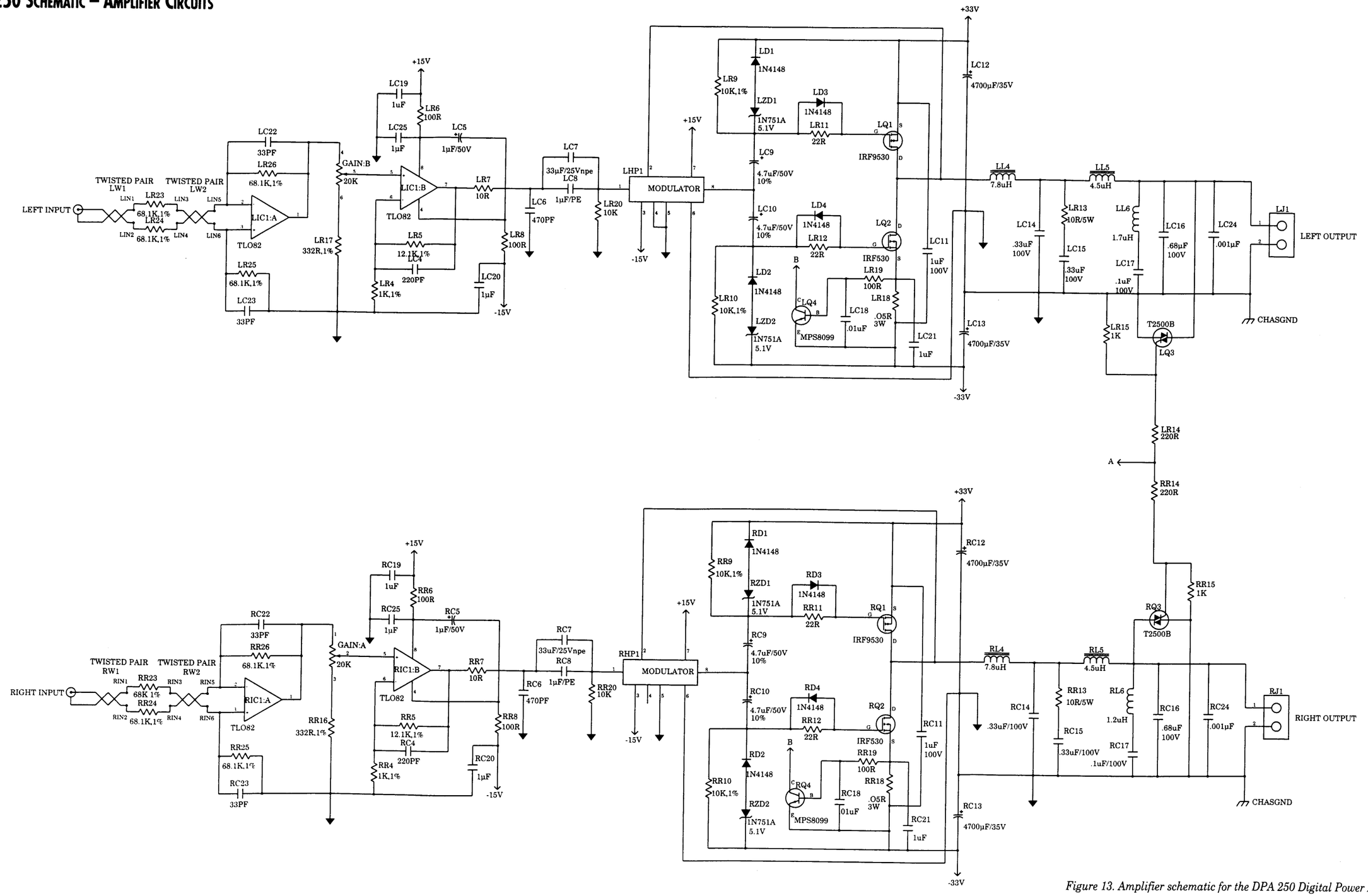

Figure 13. Amplifier schematic for the DPA 250 Digital Power Amplifier.

DPA 250 SCHEMATIC – POWER SUPPLY CIRCUITS

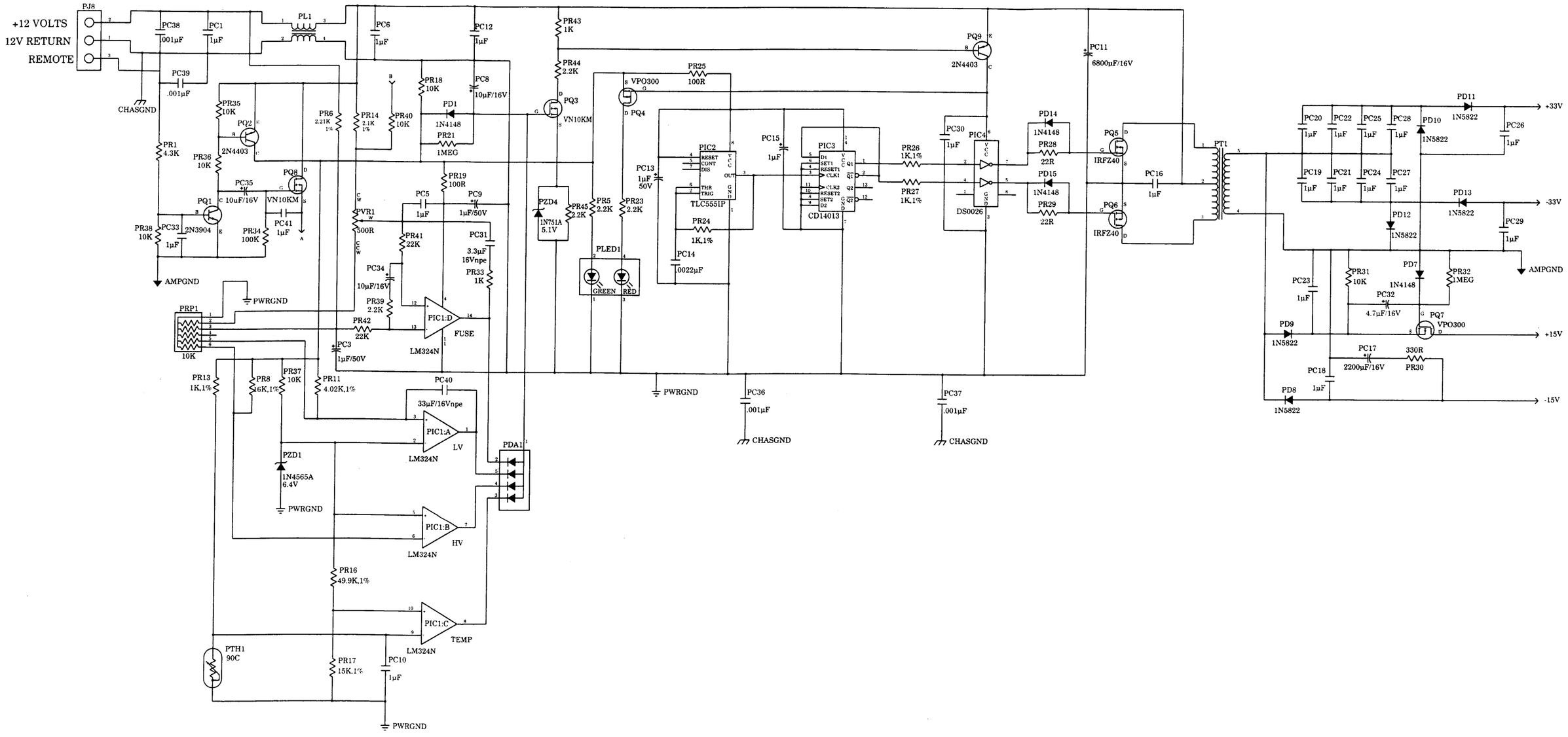

Figure 14. Power supply schematic for the DPA 250 Digital Power Amplifier.

DPA 250 Circuit Board Layout

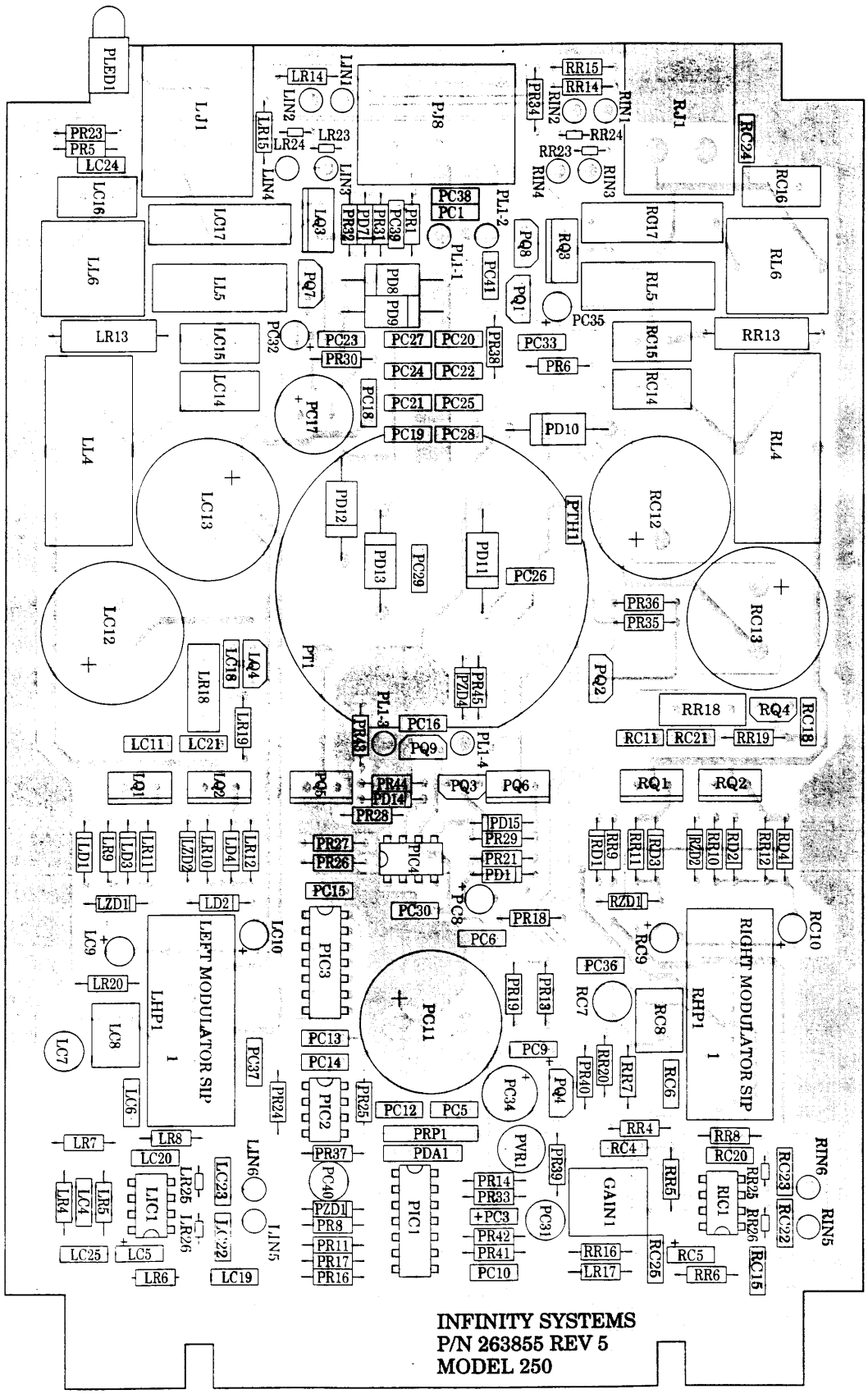

Figure 15. Circuit board layout of DPA 250 Digital Power Amplifier.

DPA 275 RESISTORS

REF #	PART #	VALUE	DESCRIPTION
LR1	RS5504	162 kΩ	1/4 W metal film 1 %
LR2	**RS5684**	**20 kΩ**	**1/4 W metal film 1 %**
LR3	RS5160	3.48 kΩ	1/4 W metal film 1 %
LR4	**RS5049**	**1 kΩ**	**1/4 W metal film 1 %**
LR5	RS5053	10 kΩ	1/4 W metal film 1 %
LR6	**RS1028**	**100 Ω**	**1/4 W carbon film 5 %**
LR8	RS1028	100 Ω	1/4 W carbon film 5 %
LR9	**RS5053**	**10 kΩ**	**1/4 W metal film 1 %**
LR10	RS5053	10 kΩ	1/4 W metal film 1 %
LR11	**RS5428**	**22 Ω**	**1/4 W carbon film 5 %**
LR12	RS5428	22 Ω	1/4 W carbon film 5 %
LR13	**RS6019**	**10 Ω**	**3 W metal oxide 5 %**
LR15	RS5065	100 kΩ	1/4 W carbon film 5 %
LR16	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
LR17	RS5570	332 Ω	1/4 W metal film 1 %
LR18	**RS5478**	**220 Ω**	**1/4 W carbon film 5 %**
LR19	RS1008	1 kΩ	1/4 W carbon film 5 %
LR20	**RS6020**	**0.05 Ω**	**3 W noninductive 10 %**
LR21	RS1028	100 Ω	1/4 W carbon film 5 %
LR22	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
LR23	RS6018	68 kΩ	1/8 W metal film 1 %
LR24	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**
LR25	RS6018	68 kΩ	1/8 W metal film 1 %
LR26	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**
LR28	RS6012	1.6 kΩ	1/4 W carbon film 5 %
PR1	**RS5362**	**4.3 kΩ**	**1/4 W carbon film 5 %**
PR5	RS5491	2.2 kΩ	1/4 W carbon film 5 %
PR6	**RS6015**	**2.21 kΩ**	**1/4 W metal film 1 %**
PR8	RS5753	16 kΩ	1/4 W metal film 1 %
PR11	**RS5646**	**4.02 kΩ**	**1/4 W metal film 1 %**
PR13	RS5049	1 kΩ	1/4 W metal film 1 %
PR14	**RS6014**	**2.1 kΩ**	**1/4 W metal film 1 %**
PR16	RS6017	49.9 kΩ	1/4 W metal film 1 %
PR17	**RS5598**	**15 kΩ**	**1/4 W metal film 1 %**
PR18	RS1013	10 kΩ	1/4 W carbon film 5 %
PR19	**RS1028**	**100 Ω**	**1/4 W carbon film 5 %**
PR21	RS5773	1 MΩ	1/4 W carbon film 5 %
PR23	**RS5491**	**2.2 kΩ**	**1/4 W carbon film 5 %**
PR24	RS5049	1 kΩ	1/4 W metal film 1 %
PR25	**RS1028**	**100 Ω**	**1/4 W carbon film 5 %**
PR26	RS5049	1 kΩ	1/4 W metal film 1 %
PR27	**RS5049**	**1 kΩ**	**1/4 W metal film 1 %**
PR28	RS5428	22 Ω	1/4 W carbon film 5 %
PR29	RS5428	22 Ω	1/4 W carbon film 5 %
PR30	**RS6024**	**330 Ω**	**1/4 W carbon film 5 %**
PR31	RS1013	10 kΩ	1/4 W carbon film 5 %
PR32	**RS5773**	**1 MΩ**	**1/4 W carbon film 5 %**
PR33	RS1008	1 kΩ	1/4 W carbon film 5 %
PR34	**RS5065**	**100 kΩ**	**1/4 W carbon film 5 %**
PR35	RS1013	10 kΩ	1/4 W carbon film 5 %
PR36	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
PR37	RS1013	10 kΩ	1/4 W carbon film 5 %
PR38	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
PR39	RS6024	330 Ω	1/4 W carbon film 5 %
PR40	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
PR41	RS5754	22 kΩ	1/4 W carbon film 5 %
PR42	**RS5754**	**22 kΩ**	**1/4 W carbon film 5 %**
PR43	RS1008	1 kΩ	1/4 W carbon film 5 %
PR44	**RS5491**	**2.2 kΩ**	**1/4 W carbon film 5 %**
PR45	RS5491	2.2 kΩ	1/4 W carbon film 5 %
PRP1	**RS6021**	**10 kΩ**	**6-pin SIP 1 common**
RR1	RS5504	162 kΩ	1/4 W metal film 1 %
RR2	**RS5684**	**20 kΩ**	**1/4 W metal film 1 %**
RR3	RS5160	3.48 kΩ	1/4 W metal film 1 %
RR4	**RS6013**	**1.1 kΩ**	**1/4 W metal film 1 %**
RR5	RS5053	10 kΩ	1/4 W metal film 1 %
RR6	**RS1028**	**100 Ω**	**1/4 W carbon film 5 %**
RR8	RS1028	100 Ω	1/4 W carbon film 5 %
RR9	**RS5053**	**10 kΩ**	**1/4 W metal film 1 %**
RR10	RS5053	10 kΩ	1/4 W metal film 1 %
RR11	**RS5428**	**22 Ω**	**1/4 W carbon film 5 %**
RR12	RS5428	22 Ω	1/4 W carbon film 5 %
RR13	**RS6019**	**10 Ω**	**3 W metal oxide 5 %**
RR15	RS5065	100 kΩ	1/4 W carbon film 5 %
RR16	**RS5570**	**332 Ω**	**1/4 W metal film 1 %**
RR18	RS5478	220 Ω	1/4 W carbon film 5 %
RR19	**RS1008**	**1 kΩ**	**1/4 W carbon film 5 %**
RR20	RS6020	0.05 Ω	3 W noninductive 10%
RR21	**RS1028**	**100 Ω**	**1/4 W carbon film 5 %**
RR22	RS1013	10 kΩ	1/4 W carbon film 5 %
RR23	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**
RR24	RS6018	68 kΩ	1/8 W metal film 1 %
RR25	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**
RR26	RS6018	68 kΩ	1/8 W metal film 1 %
RR28	**RS6012**	**1.6 kΩ**	**1/4 W carbon film 5 %**

DPA 275 POTENTIOMETERS

REF #	PART #	VALUE	DESCRIPTION
GAIN	RS6023	20 kΩ	Dual Potentiometer
PVR1	**RS6022**	**500 Ω**	**Single Potentiometer**
TONE	RS6023	20 kΩ	Dual Potentiometer

DPA 275 CAPACITORS

REF #	PART #	VALUE	DESCRIPTION
LC1	CP5586	.56 µF, 50 V	Polyester 5 %
LC2	**CP5582**	**.05 µF, 100 V**	**Polyester 5 %**
LC3	CP5245	100 pF, 50 V	Ceramic
LC4	**CP5590**	**220 pF, 100 V**	**Ceramic**
LC5	CP5227	1 µF, 50 V	Electro. 105°
LC6	**CP5591**	**470 pF, 50 V**	**Ceramic**
LC7	CP5579	33 µF, 25 V	NP Electro.
LC8	**CP5254**	**1 µF, 50 V**	**Polyester 5 %**
LC9	CP5575	4.7 µF, 50 V	Electro. 105°
LC10	**CP5575**	**4.7 µF, 50 V**	**Electro. 105°**
LC11	CP5581	1 µF, 100 V	Monolithic
LC12	**CP5576**	**5600 µF, 50 V**	**Electro. 105°**
LC13	CP5576	5600 µF, 50 V	Electro. 105°
LC14	**CP5584**	**.33 µF, 100 V**	**Polyester 5 %**
LC15	CP5584	.33 µF, 100 V	Polyester 5 %
LC16	**CP5585**	**.68 µF, 50 V**	**Polyester 5 %**
LC17	CP5494	.1 µF, 100 V	Polypropylene
LC18	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC19	CP5580	1 µF, 50 V	Monolithic
LC20	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC21	CP5580	1 µF, 50 V	Monolithic
LC22	**CP5589**	**33 pF, 500 V**	**Ceramic**
LC23	CP5589	33 pF, 500 V	Ceramic
LC24	**CP5587**	**.001 µF, 100 V**	**Ceramic**
LC25	CP5588	.01 µF, 100 V	Ceramic
LC26	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC1	CP5580	1 µF, 50 V	Monolithic
PC3	**CP5227**	**1 µF, 50 V**	**Electro. 105°**
PC5	CP5580	1 µF, 50 V	Monolithic
PC6	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC8	CP5593	10 µF, 16 V	Electro. 105°
PC9	**CP5227**	**1 µF, 50 V**	**Electro. 105°**
PC10	CP5580	1 µF, 50 V	Monolithic
PC11	**CP5574**	**6800 µF, 16 V**	**Electro. 105°**
PC12	CP5580	1 µF, 50 V	Monolithic
PC13	**CP5227**	**1 µF, 50 V**	**Electro. 105°**
PC14	CP5583	.0022 µF, 50 V	Polyester 5 %
PC15	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC16	CP5580	1 µF, 50 V	Monolithic
PC17	**CP5573**	**2200 µF, 16 V**	**Electro. 105°**
PC18	CP5580	1 µF, 50 V	Monolithic
PC19	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC20	CP5580	1 µF, 50 V	Monolithic
PC21	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC22	CP5580	1 µF, 50 V	Monolithic
PC23	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC24	CP5580	1 µF, 50 V	Monolithic
PC25	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC26	CP5580	1 µF, 50 V	Monolithic
PC27	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC28	CP5580	1 µF, 50 V	Monolithic
PC29	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC30	CP5580	1 µF, 50 V	Monolithic
PC31	**CP5577**	**3.3 µF, 16 V**	**NP Electro.**
PC32	CP5597	4.7 µF, 16 V	Electro. 105°
PC33	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC34	CP5287	470 µF, 10 V	Electro. 105°
PC35	**CP5593**	**10 µF, 16 V**	**Electro. 105°**
PC36	CP5587	.001 µF, 100 V	Ceramic
PC37	**CP5587**	**.001 µF, 100 V**	**Ceramic**
PC38	CP5587	.001 µF, 100 V	Ceramic
PC39	**CP5587**	**.001 µF, 100 V**	**Ceramic**
PC40	CP5598	33 µF, 16 V	NP Electro.
PC41	**CP5580**	**1 µF, 50 V**	**Monolithic**
RC1	CP5586	.56 µF, 50 V	Polyester 5 %
RC2	**CP5582**	**.05 µF, 100 V**	**Polyester 5 %**
RC3	CP5245	100 pF, 50 V	Ceramic
RC4	**CP5590**	**220 pF, 100 V**	**Ceramic**
RC5	CP5227	1 µF, 50 V	Electro. 105°
RC6	**CP5591**	**470 pF, 50 V**	**Ceramic**
RC7	CP5579	33 µF, 25 V	NP Electro.
RC8	**CP5254**	**1 µF, 50 V**	**Polyester 5 %**
RC9	CP5575	4.7 µF, 50 V	Electro. 105°
RC10	**CP5575**	**4.7 µF, 50 V**	**Electro. 105°**
RC11	CP5581	1 µF, 100 V	Monolithic
RC12	**CP5576**	**5600 µF, 50 V**	**Electro. 105°**
RC13	CP5576	5600 µF, 50 V	Electro. 105°
RC14	**CP5584**	**.33 µF, 100 V**	**Polyester 5 %**
RC15	CP5584	.33 µF, 100 V	Polyester 5 %
RC16	**CP5585**	**.68 µF, 50 V**	**Polyester 5 %**
RC17	CP5494	.1 µF, 100 V	Polypropylene
RC18	**CP5580**	**1 µF, 50 V**	**Monolithic**
RC19	CP5580	1 µF, 50 V	Monolithic
RC20	**CP5580**	**1 µF, 50 V**	**Monolithic**
RC21	CP5580	1 µF, 50 V	Monolithic
RC22	**CP5589**	**33 pF, 500 V**	**Ceramic**
RC23	CP5589	33 pF, 500 V	Ceramic
RC24	**CP5587**	**.001 µF, 100 V**	**Ceramic**
RC25	CP5588	.01 µF, 100 V	Ceramic
RC26	**CP5580**	**1 µF, 50 V**	**Monolithic**
RC27	CP5580	1 µF, 50 V	Monolithic

DPA 275 INDUCTORS

REF #	PART #	VALUE	DESCRIPTION
LL4	MI5088	7.8 µH P.I.C.	448-6245
LL5	**MI5087**	**4.5 µH P.I.C.**	**448-6244**
LL6	MI5085	1.7 µH air core	439-6240
PL1	**MI5089**	**7 turn/13 turn**	**441-6243**
RL4	MI5088	7.8 µH P.I.C.	448-6245
RL5	**MI5087**	**4.5 µH P.I.C.**	**448-6244**
RL6	MI5086	1.2 µH air core	439-6239

DPA 275 DIODES

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LD1	DI5022	1N4148	General	PD14	DI5022	1N4148	General
LD2	**DI5022**	**1N4148**	**General**	**PD15**	**DI5022**	**1N4148**	**General**
LD3	DI5022	1N4148	General	PDA1	DI5190	Rohm DAP401	Diode array
LD4	**DI5022**	**1N4148**	**General**	**PLED1**	**LE5022**	**DDPPCT200BR/BG**	**LED**
LD7	DI5022	1N4148	General	PZD1	DI5189	1N4565A	Zener 6.4 V
LZD1	**DI5163**	**1N751A**	**Zener 5.1 V**	**PZD2**	**DI5188**	**1N5366B**	**Zener 39 V, 5 W**
LZD2	DI5163	1N751A	Zener 5.1 V	PZD3	DI5188	1N5366B	Zener 39 V, 5 W
PD1	**DI5022**	**1N4148**	**General**	**PZD4**	**DI5163**	**1N751A**	**Zener 5.1 V**
PD7	DI5022	1N4148	General	RD1	DI5022	1N4148	General
PD8	**DI5187**	**1N5822**	**Schottky**	**RD2**	**DI5022**	**1N4148**	**General**
PD9	DI5187	1N5822	Schottky	RD3	DI5022	1N4148	General
PD10	**DI5187**	**1N5822**	**Schottky**	**RD4**	**DI5022**	**1N4148**	**General**
PD11	DI5187	1N5822	Schottky	RD7	DI5022	1N4148	General
PD12	**DI5187**	**1N5822**	**Schottky**	**RZD1**	**DI5163**	**1N751A**	**Zener 5.1 V**
PD13	DI5187	1N5822	Schottky	RZD2	DI5163	1N751A	Zener 5.1 V

DPA 275 INTEGRATED CIRCUITS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LIC1	IC5171	TLO74CNJFET	Op-amp	PIC3	IC5173	14013	Dual D flip-flop
PIC1	**IC1003**	**LM324N**	**Quad Op-amp**	**PIC4**	**IC5174**	**DS0026CN**	**Dual driver**
PIC2	IC5172	TLC555IP	Timer	RIC1	IC5171	TLO74CNJFET	Op-amp

DPA 275 TRANSISTORS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LQ1	TR5159	IRF9530	MOSFET	PQ6	TR5074	IRFZ40	MOSFET
LQ2	**TR5158**	**IRF530**	**MOSFET**	**PQ7**	**TR5160**	**VPO300**	**MOSFET**
LQ3	TR5161	2N3819	FET	PQ8	TR5157	VN10KM	MOSFET
LQ4	**TR5162**	**T2500**	**TRIAC**	**PQ9**	**TR5155**	**2N4403**	**Bi-polar**
LQ5	TR5156	MPS8099	Bi-polar	RQ1	TR5159	IRF9530	MOSFET
PQ1	**TR4002**	**2N3904**	**Bi-polar**	**RQ2**	**TR5158**	**IRF530**	**MOSFET**
PQ2	TR5155	2N4403	Bi-polar	RQ3	TR5161	2N3819	FET
PQ3	**TR5157**	**VN10KM**	**MOSFET**	**RQ4**	**TR5162**	**T2500**	**TRIAC**
PQ4	TR5160	VPO300	MOSFET	RQ5	TR5156	MPS8099	Bi-polar
PQ5	**TR5074**	**IRFZ40**	**MOSFET**				

DPA 275 MISCELLANEOUS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
F1	FS5069	20A	Fuse	PJ8	CO5277		Power connect.
LCM	**XX5179**	**048-6451**	**Modulator**	**PT1**	**MI5090**	**12 turn ct.**	**P/8T's transfmr.**
LJ1	CO5273		Output conn.	PTH1	TH5018	Keystone	90° C Therm.
LSW1	**SW5059**		**Spdt switch**	**RCM**	**XX5179**	**048-6451**	**Modulator**
LW1	WI5581	24 gauge	Wire - blu/yel	RJ1	CO5273		Output conn.
LW2	**WI5582**	**24 gauge**	**Wire - yel/blu**	**RW1**	**WI5581**	**24 gauge**	**Wire - blu/yel**
PCB	PC5074	Rev. 13	DPA 275 PCB	RW2	WI5582	24 gauge	Wire - yel/blu

DPA 250 RESISTORS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LR4	RS5049	1 kΩ	1/4 W metal film 1 %	PR29	RS5428	22 Ω	1/4 W carbon film 5 %
LR5	**RS6027**	**12 kΩ**	**1/4 W metal film 1 %**	**PR30**	**RS6024**	**330 Ω**	**1/4 W carbon film 5 %**
LR6	RS1028	100 Ω	1/4 W carbon film 5 %	PR31	RS1013	10 kΩ	1/4 W carbon film 5 %
LR7	**RS1001**	**10 Ω**	**1/4 W carbon film 5 %**	**PR32**	**RS5773**	**1 MΩ**	**1/4 W carbon film 5 %**
LR8	RS1028	100 Ω	1/4 W carbon film 5 %	PR33	RS1008	1 kΩ	1/4 W carbon film 5 %
LR9	**RS5053**	**10 kΩ**	**1/4 W metal film 1 %**	**PR34**	**RS5065**	**100 kΩ**	**1/4 W carbon film 5 %**
LR10	RS5053	10 kΩ	1/4 W metal film 1 %	PR35	RS1013	10 kΩ	1/4 W carbon film 5 %
LR11	**RS5428**	**22 Ω**	**1/4 W carbon film 5 %**	**PR36**	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
LR12	RS5428	22 Ω	1/4 W carbon film 5 %	PR37	RS1013	10 kΩ	1/4 W carbon film 5 %
LR13	**RS6019**	**10 Ω**	**3 W metal oxide 5 %**	**PR38**	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
LR14	RS5478	220 Ω	1/4 W carbon film 5 %	PR39	RS6024	330 Ω	1/4 W carbon film 5 %
LR15	**RS1008**	**1 kΩ**	**1/4 W carbon film 5 %**	**PR40**	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
LR17	RS6024	330 Ω	1/4 W metal film 1 %	PR41	RS5754	22 kΩ	1/4 W carbon film 5 %
LR18	**RS6020**	**0.05 Ω**	**3 W noninductive 10 %**	**PR42**	**RS5754**	**22 kΩ**	**1/4 W carbon film 5 %**
LR19	RS1028	100 Ω	1/4 W carbon film 5 %	PR43	RS1008	1 kΩ	1/4 W carbon film 5 %
LR20	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**	**PR44**	**RS5491**	**2.2 kΩ**	**1/4 W carbon film 5 %**
LR23	RS6018	68 kΩ	1/8 W metal film 1 %	PR45	RS5491	2.2 kΩ	1/4 W carbon film 5 %
LR24	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**	**PRP1**	**RS6021**	**10 kΩ**	**6-pin SIP 1 common**
LR25	RS6018	68 kΩ	1/8 W metal film 1 %	RR4	RS5049	1 kΩ	1/4 W metal film 1 %
LR26	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**	**RR5**	**RS6027**	**12 kΩ**	**1/4 W metal film 1 %**
PR1	RS5362	47 kΩ	1/4 W carbon film 5 %	RR6	RS1028	100 Ω	1/4 W carbon film 5 %
PR5	**RS5491**	**2.2 kΩ**	**1/4 W carbon film 5 %**	**RR7**	**RS1001**	**10 Ω**	**1/4 W carbon film 5 %**
PR6	RS6015	2.21 kΩ	1/4 W metal film 1 %	RR8	RS1028	100 Ω	1/4 W carbon film 5 %
PR8	**RS5753**	**16 kΩ**	**1/4 W metal film 1 %**	**RR9**	**RS5053**	**10 kΩ**	**1/4 W metal film 1 %**
PR11	RS5646	4.02 kΩ	1/4 W metal film 1 %	RR10	RS5053	10 kΩ	1/4 W metal film 1 %
PR13	**RS5049**	**1 kΩ**	**1/4 W metal film 1 %**	**RR11**	**RS5428**	**22 Ω**	**1/4 W carbon film 5 %**
PR14	RS6014	2.1 kΩ	1/4 W metal film 1 %	RR12	RS5428	22 Ω	1/4 W carbon film 5 %
PR16	**RS6017**	**49.9 kΩ**	**1/4 W metal film 1 %**	**RR13**	**RS6019**	**10 Ω**	**3 W metal oxide 5 %**
PR17	RS5598	15 kΩ	1/4 W metal film 1 %	RR14	RS5478	220 Ω	1/4 W carbon film 5 %
PR18	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**	**RR15**	**RS1008**	**1 kΩ**	**1/4 W carbon film 5 %**
PR19	RS1028	100 Ω	1/4 W carbon film 5 %	RR16	RS6024	330 Ω	1/4 W metal film 1 %
PR21	**RS5773**	**1 MΩ**	**1/4 W carbon film 5 %**	**RR18**	**RS6020**	**0.05 Ω**	**3 W noninductive 10 %**
PR23	RS5491	2.2 kΩ	1/4 W carbon film 5 %	RR19	RS1028	100 Ω	1/4 W carbon film 5 %
PR24	**RS5049**	**1 kΩ**	**1/4 W metal film 1 %**	**RR20**	**RS1013**	**10 kΩ**	**1/4 W carbon film 5 %**
PR25	RS1028	100 Ω	1/4 W carbon film 5 %	RR23	RS6018	68 kΩ	1/8 W metal film 1 %
PR26	**RS5049**	**1 kΩ**	**1/4 W metal film 1 %**	**RR24**	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**
PR27	RS5049	1 kΩ	1/4 W metal film 1 %	RR25	RS6018	68 kΩ	1/8 W metal film 1 %
PR28	**RS5428**	**22 Ω**	**1/4 W carbon film 5 %**	**RR26**	**RS6018**	**68 kΩ**	**1/8 W metal film 1 %**

DPA 250 POTENTIOMETERS

REF #	PART #	VALUE	DESCRIPTION
GAIN	RS6023	20 kΩ	Dual Potentiometer
PVR1	**RS6022**	**500 Ω**	**Single Potentiometer**

DPA 250 CAPACITORS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LC4	CP5590	220 pF, 100 V	Ceramic	PC24	CP5580	1 µF, 50 V	Monolithic
LC5	**CP5527**	**1 µF, 50 V**	**Electro. 105°**	**PC25**	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC6	CP5591	470 pF, 50 V	Ceramic	PC26	CP5580	1 µF, 50 V	Monolithic
LC7	**CP5579**	**33 µF, 25 V**	**NP Electro.**	**PC27**	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC8	CP5254	1 µF, 50 V	Polyester 5 %	PC28	CP5580	1 µF, 50 V	Monolithic
LC9	**CP5575**	**4.7 µF, 50 V**	**Electro. 105°**	**PC29**	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC10	CP5575	4.7 µF, 50 V	Electro. 105°	PC30	CP5580	1 µF, 50 V	Monolithic
LC11	**CP5581**	**1 µF, 100 V**	**Monolithic**	**PC31**	**CP5577**	**3.3 µF, 16 V**	**NP Electro.**
LC12	CP5600	4700 µF, 35 V	Electro. 105°	PC32	CP5597	4.7 µF, 16 V	Electro. 105°
LC13	**CP5600**	**4700 µF, 35 V**	**Electro. 105°**	**PC33**	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC14	CP5584	.33 µF, 100 V	Polyester 5 %	PC34	CP5287	470 µF, 10 V	Electro. 105°
LC15	**CP5584**	**.33 µF, 100 V**	**Polyester 5 %**	**PC35**	**CP5593**	**10 µF, 16 V**	**Electro. 105°**
LC16	CP5585	.68 µF, 50 V	Polyester 5 %	PC36	CP5587	.001 µF, 100 V	Ceramic
LC17	**CP5494**	**.1 µF, 100 V**	**Polypropylene**	**PC37**	**CP5587**	**.001 µF, 100 V**	**Ceramic**
LC18	CP5584	.33 µF, 100 V	Polyester 5 %	PC38	CP5587	.001 µF, 100 V	Ceramic
LC19	**CP5580**	**1 µF, 50 V**	**Monolithic**	**PC39**	**CP5587**	**.001 µF, 100 V**	**Ceramic**
LC20	CP5580	1 µF, 50 V	Monolithic	PC40	CP5598	33 µF, 16 V	NP Electro.
LC21	**CP5580**	**1 µF, 50 V**	**Monolithic**	**PC41**	**CP5580**	**1 µF, 50 V**	**Monolithic**
LC22	CP5589	33 pF, 500 V	Ceramic	RC4	CP5590	220 pF, 100 V	Ceramic
LC24	**CP5587**	**.001 µF, 100 V**	**Ceramic**	**RC5**	**CP5527**	**1 µF, 50 V**	**Electro. 105°**
LC25	CP5580	1 µF, 50 V	Monolithic	RC6	CP5591	470 pF, 50 V	Ceramic
PC1	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC7**	**CP5579**	**33 µF, 25 V**	**NP Electro.**
PC3	CP5527	1 µF, 50 V	Electro. 105°	RC8	CP5254	1 µF, 50 V	Polyester 5 %
PC5	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC9**	**CP5575**	**4.7 µF, 50 V**	**Electro. 105°**
PC6	CP5580	1 µF, 50 V	Monolithic	RC10	CP5575	4.7 µF, 50 V	Electro. 105°
PC8	**CP5593**	**10 µF, 16 V**	**Electro. 105°**	**RC11**	**CP5581**	**1 µF, 100 V**	**Monolithic**
PC9	CP5527	1 µF, 50 V	Electro. 105°	RC12	CP5600	4700 µF, 35 V	Electro. 105°
PC10	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC13**	**CP5600**	**4700 µF, 35 V**	**Electro. 105°**
PC11	CP5574	6800 µF, 16 V	Electro. 105°	RC14	CP5584	.33 µF, 100 V	Polyester 5 %
PC12	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC15**	**CP5584**	**.33 µF, 100 V**	**Polyester 5 %**
PC13	CP5527	1 µF, 50 V	Electro. 105°	RC16	CP5585	.68 µF, 50 V	Polyester 5 %
PC14	**CP5583**	**.0022 µF, 50 V**	**Polyester 5 %**	**RC17**	**CP5494**	**.1 µF, 100 V**	**Polypropylene**
PC15	CP5580	1 µF, 50 V	Monolithic	RC18	CP5599	.01 µF, 50 V	Polyester 5 %
PC16	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC19**	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC17	CP5573	2200 µF, 16 V	Electro. 105°	RC20	CP5580	1 µF, 50 V	Monolithic
PC18	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC21**	**CP5580**	**1 µF, 50 V**	**Monolithic**
PC19	CP5580	1 µF, 50 V	Monolithic	RC22	CP5589	33 pF, 500 V	Ceramic
PC20	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC23**	**CP5589**	**33 pF, 500 V**	**Ceramic**
PC21	CP5580	1 µF, 50 V	Monolithic	RC23	CP5589	33 pF, 500 V	Ceramic
PC22	**CP5580**	**1 µF, 50 V**	**Monolithic**	**RC24**	**CP5587**	**.001 µF, 100 V**	**Ceramic**
PC23	CP5580	1 µF, 50 V	Monolithic	RC25	CP5580	1 µF, 50 V	Monolithic

DPA 250 INDUCTORS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LL4	MI5088	7.8 µH P.I.C.	445-6245	RL4	MI5088	7.8 µH P.I.C	445-6245
LL5	**MI5087**	**4.5 µH P.I.C**	**445-6244**	**RL5**	**MI5087**	**4.5 µH P.I.C**	**445-6244**
LL6	MI5085	1.7 µH air core	439-6240	RL6	MI5086	1.2 µH air core	439-6239
PL1	**MI5089**	**7 turn/13 turn**	**441-6243**				

DPA 250 DIODES

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LD1	DI5022	1N4148	General	PD13	DI5187	1N5822	Schottky
LD2	**DI5022**	**1N4148**	**General**	**PD14**	**DI5022**	**1N4148**	**General**
LD3	DI5022	1N4148	General	PD15	DI5022	1N4148	General
LD4	**DI5022**	**1N4148**	**General**	**PDA1**	**DI5190**	**Rohm DAP401**	**Diode array**
LZD1	DI5163	1N751A	Zener 5.1 V	PLED1	DI5022	DDPPCT200BR/BG	LED
LZD2	**DI5163**	**1N751A**	**Zener 5.1 V**	**PZD1**	**DI5189**	**1N4565A**	**Zener 6.4 V**
PD1	DI5022	1N4148	General	PZD4	DI5163	1N751A	Zener 5.1 V
PD7	**DI5022**	**1N4148**	**General**	**RD1**	**DI5022**	**1N4148**	**General**
PD8	DI5187	1N5822	Schottky	RD2	DI5022	1N4148	General
PD9	**DI5187**	**1N5822**	**Schottky**	**RD3**	**DI5022**	**1N4148**	**General**
PD10	DI5187	1N5822	Schottky	RD4	DI5022	1N4148	General
PD11	**DI5187**	**1N5822**	**Schottky**	**RZD1**	**DI5163**	**1N751A**	**Zener 5.1 V**
PD12	DI5187	1N5822	Schottky	RZD2	DI5163	1N751A	Zener 5.1 V

DPA 250 INTEGRATED CIRCUITS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LIC1	IC5171	TL084CN	JFET Op-amp	PIC3	IC5173	14013	Dual flip-flop
PIC1	**IC1003**	**LM324N**	**Quad Op-amp**	**PIC4**	**IC5174**	**DS0026CN**	**Dual driver**
PIC2	IC5172	TLC555IP	Timer	RIC1	IC5171	TL084CN	JFET Op-amp

DPA 250 TRANSISTORS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
LQ1	TR5159	IRF9530	MOSFET	PQ6	TR5074	IRFZ40	MOSFET
LQ2	**TR5158**	**IRF530**	**MOSFET**	**PQ7**	**TR5160**	**VPO300**	**MOSFET**
LQ3	TR5162	T2500	TRIAC	PQ8	TR5157	VN10KM	MOSFET
LQ4	**TR5156**	**MPS8099**	**Bi-polar**	**PQ9**	**TR5155**	**2N4403**	**Bi-polar**
PQ1	TR4002	2N3904	Bi-polar	RQ1	TR5159	IRF9530	MOSFET
PQ2	**TR5155**	**2N4403**	**Bi-polar**	**RQ2**	**TR5158**	**IRF530**	**MOSFET**
PQ3	TR5157	VN10KM	MOSFET	RQ3	TR5162	T2500	TRIAC
PQ4	**TR5160**	**VPO300**	**MOSFET**	**RQ4**	**TR5156**	**MPS8099**	**Bi-polar**
PQ5	TR5074	IRFZ40	MOSFET				

DPA 250 MISCELLANEOUS

REF #	PART #	VALUE	DESCRIPTION	REF #	PART #	VALUE	DESCRIPTION
F1	FS5069	20A	Fuse	PT1	MI5090	12 turn ct.	P/8T's transfmr.
LHP1	**XX5181**	**048-65195181**	**Modulator**	**PTH1**	**TH5018**	**Keystone**	**90° C Therm.**
LJ1	CO5273		Output conn.	RHP1	XX5181	048-6519	Modulator
LW1	**WI5581**	**24 gauge**	**Wire - blu/yel**	**RJ1**	**CO5273**		**Output conn.**
LW2	WI5582	24 gauge	Wire - yel/blu	RW1	WI5581	24 gauge	Wire - blu/yel
PCB	**PC5076**	**Rev. 4**	**DPA 250 PCB**	**RW2**	**WI5582**	**24 gauge**	**Wire - yel/blu**
PJ8	CO5277		Power conn.				

P/N .935...7123